



## ITP-216 Applied Python

[Link to this document](#)

**Units:** 2

**Fall 2022**

**Location:** See USC Schedule of Classes

**Instructors:** Greg Pohlner

**Office:** Posted on Blackboard and Piazza

**Office Hours:** Posted on Blackboard and Piazza

**Contact Info:**

For all questions about assignments or generally pertaining to the course: Piazza.

For all other questions, email: [pohlner@usc.edu](mailto:pohlner@usc.edu)

**Teaching Assistants:**

**Office:** Posted on Blackboard and Piazza

**Office Hours:** Posted on Blackboard and Piazza

**IT Help:** Viterbi IT

**Hours of Service:**

Monday – Friday, 8:30 a.m. – 5:00 p.m.

**Contact Info:**

DRB 205

(213) 740-0517

[engrhelp@usc.edu](mailto:engrhelp@usc.edu)

### Course Description

This course focuses on development of practical Python programming skills through project-based application. It is split into two parts: part one focuses on powerful features of the Python programming language itself ("Pythonic" programming), which allow students to quickly and easily manipulate data in ways not found in other languages. Part two focuses on application of modules to solve domain-specific challenges, such as in scientific computation and data visualization, system manipulation and automation, web development, and machine learning.

### Learning Objectives

By the end of this course, students should be able to:

- Understand "Pythonic" programming techniques
- Create a computational-thinking-based plan for solving a programming challenge
- Implement a solution to a programming challenge
- Evaluate the effectiveness of a program
- Generate, organize, analyze, and interpret data in a variety of domain-specific settings

**Prerequisite(s):** ITP-115 or equivalent

### Course Notes

This course will make use of several tools for delivery of content and assignments, and for general communication. Blackboard (<http://blackboard.usc.edu>) will serve as the entry-point to all of this. Lecture slides and any supplemental course content will be posted to Blackboard for use by all students. All assignments will be posted to Blackboard and will be submitted through Blackboard. General assignment help and communication will be done through Piazza, an invite to which will be sent at the beginning of the semester, and a link to which will be posted in Blackboard. Please familiarize yourself with Blackboard before the course begins.

### **Adding the course after the first week**

Per university policy, students are allowed to add the course until the end of week three. Any students wishing to add the course should plan on attending the course from the beginning of the semester. If the student needs to add the course after week 1, they will need to apply for D-Clearance. Upon getting D Clearance, students will need to reach out to advising to add the class, and should email the instructor immediately to make sure there is a plan for completion of work and learning missed materials. Any missed work is required to be completed and submitted according to the schedule provided by the instructor.

### **Technological Proficiency and Hardware/Software Required**

Students will need a computer (laptop or desktop) and access to the internet. If you do not have access to a computer, please contact your instructor.

Students should have basic technical knowledge of their computer, including the ability to install software, download course material, and properly submit their assignments online. All software needed for the course is available for free.

## Required Readings and Supplementary Materials

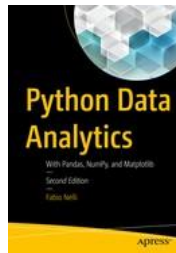
Required materials: None

Supplementary Materials:



Automate the Boring Stuff with Python 2e

<https://learning.oreilly.com/library/view/automate-the-boring/9781098122584/>



Python Data Analytics: With Pandas, NumPy, and Matplotlib

<https://learning.oreilly.com/library/view/python-data-analytics/9781484239131/>



Think Python 2e

<https://learning.oreilly.com/library/view/think-python-2nd/9781491939406/>



Head-First Python

<https://learning.oreilly.com/library/view/head-first-python/9781491919521/>

Additional reference material will be provided as needed.

## Course Grading Breakdown

Item	% of grade
Homeworks	50
Labs	10
Test (one)	10
Final Project	30
<b>TOTAL</b>	<b>100</b>

## Assignments

There are two types of assignments in this course:

- **Homework:** week-long assignments which pertain to the material from the current week as well as to previous weeks. Typically, these are due one week after being assigned.
- **Lab:** short, direct application of the week's topics for reinforcement. Typically, these are due one day after being assigned.

Generally, each week there will be one Homework and one Lab assigned, each of which relate to the topic covered that particular week. **Students are expected to complete these assignments individually.** Each assignment will include instructions, a due date, and a link for electronic submission. Assignments must be submitted using this link; they will not be accepted through any other method.

## Assignment Submission Policy

All assignments must be submitted through Blackboard; a link will be provided for each. They will not be accepted through any other method.

## Late Assignment Policy

It is the student's responsibility to submit assignments on or before the due date. Assignments may be submitted within two days with a late penalty. Homeworks turned in one day (24 hours) late will have 25% of the total points deducted from the graded score. Homeworks turned in over one day and up to two days (>24 hours and <= 48hours) late will have 50% of the total points deducted from the graded score. After two days, submissions will not be accepted, and the score for the assignment will be a 0. No credit is given for late Labs.

## Regrade requests

Students have one week to contest a grade once it has been posted on Blackboard. After this one week, the grade will not be changed. To contest a grade, create a private post on Piazza and select the grades folder. In the post, include your name, the assignment name, and your reasons. Tag your instructor and your grader. This will allow the grader and instructor to view your submission and make a decision.

## Tests

No make-up tests (except for documented medical or family emergencies) will be offered. If you will not be able to attend a test due to an athletic game or other valid reason, then you must coordinate with the instructor before the test is given. You may arrange to take the test before you leave with an approved university personnel during the time you are gone, or within the week the test is given. If you do not take a test, then you will receive a 0 for the test. If you need accommodations authorized by DSP (Disability Services and Programs), notify the instructor at least two weeks before the test. This will allow time for arrangements to be made.

## Final Project

### Description

There will be a final project in this course which aims to solve a real-world problem by applying Pythonic techniques. Each student will conceive of, design, build, test, and verify a solution for the given problem.

The implementation of the final project itself will be a web app which incorporates two or more of the various computational domains covered during the semester. The concept of the app is up to the student; the project proposal must be approved by the instructor. The proposal should include a generalized description of the solution app, the target audience, and a description of which computational domains it will incorporate.

The final project will be graded on how it fulfills the requirements and the quality and completion of the app. **The Final Project must represent the student's sole effort.**

### Schedule

Week	Event
11	Project assigned
12	Due: Proposal
13 through 16	Work on Final Projects
16 (Final exam period)	Due: Final Project

### Final Project Grading Breakdown

Item	% of grade
Proposal	10
Web app component	30
Computational domain 1 component	30
Computational domain 2 component	30
<b>TOTAL</b>	100

### Attendance and Etiquette

Attendance is not part of the grading breakdown, although attending scheduled meetings will help you learn the material and succeed in this class. The instructor expects you to pay attention during scheduled meetings and be an active learner. Chatting while the instructor is talking, texting on your mobile device, and participating on social media sites during class is disrespectful to the instructor and your classmates. If you are not able to attend lectures, then you should watch the recorded lectures and complete the in-class labs.

### Academic Integrity

Assignments in computer programming courses are different from those in some other types of courses. Students may NOT collaborate, work together, share code, or in any way exchange solutions for assignments. Assignments may be analyzed by software that looks for similarity. Any sharing of ideas or code will be considered a violation of academic integrity (cheating); an SJACS report will be filed with the recommended penalty of an F in the course. Do not share your code with anyone else in this or a future section of the course, as allowing someone else to copy your code carries the same penalty as copying the code yourself.

If the instructor, a grader, or a teaching assistant suspects you of academic dishonesty, it has to be reported to SJACS. Do not share assignments with another person. Do not submit another person's work as your own. Do not look at other students' papers during tests. Do not leave the room during a test without permission. Do not cheat! As Trojans, we are faithful, scholarly, skillful, courageous, and ambitious.

## Sharing of course materials outside of the learning environment

As per SCampus Section 11.12(B):

*Distribution or use of notes or recordings based on university classes or lectures without the express permission of the instructor for purposes other than individual or group study is a violation of the USC Student Conduct Code. This includes, but is not limited to, providing materials for distribution by services publishing class notes. This restriction on unauthorized use also applies to all information, which had been distributed to students or in any way had been displayed for use in relationship to the class, whether obtained in class, via email, on the Internet or via any other media. (See Section C.1 Class Notes Policy*

## Course Schedule: A Weekly Breakdown

Week	Topics	Supplementary Reading	Assigned work	Due
1	Introduction: problem-solving, Python IO and tools	Automate Ch 1, 2	-	-
2	Python Core: sequence, selection, iterate, and data types	Think Python Ch 13	L02, H02	L02
3	Python Core: functions	Automate Ch 3	L03, H03	L03, H02
4	Objects and Classes: the basics	Think Python Ch 17, 18	L04, H04	L04, H03
5	Objects and Classes: packages and modules	Automate Appendix A	L05, H05	L05, H04
6	<i>Pythonic</i> : iterators, comprehensions, and generators	Think Python Ch 19	L06, H06	L06, H05
7	<i>Pythonic</i> : first-class objects (decorators, functional programming)	Head First Ch 10	L07	L07, H06
8	Test 01; Debugging	-	L08	L08
9	Web Part 1: Scraping	Automate Ch 12	L09, H09	L09
10	Web Part 2: Backend (flask)	Automate Ch 16		L10, H09
11	Web Part 3: Databases	Head First Ch 5	H11, FINAL PROJECT	L11, H10
12	Scientific Computation	Python Data Analytics Ch 3, 4	L12, H12	L12, H11
13	Data Visualization	Python Data Analytics Ch 6	L13	L13, FP PROPOSAL
14	Machine Learning part 1	Python Data Analytics Ch 8, 9	L14	L14
15	Machine Learning part 2		-	-
<b>FINALS</b>	FINAL PROJECT DUE	<b>Date:</b> TBD		

## Statement on Academic Conduct and Support Systems

### Academic Conduct:

Plagiarism – presenting someone else’s ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in SCampus in Part B, Section 11, “Behavior Violating University Standards” [policy.usc.edu/scampus-part-b](https://policy.usc.edu/scampus-part-b). Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on scientific misconduct, [policy.usc.edu/scientific-misconduct](https://policy.usc.edu/scientific-misconduct).

### Support Systems:

*Counseling and Mental Health - (213) 740-9355 – 24/7 on call*

[studenthealth.usc.edu/counseling](https://studenthealth.usc.edu/counseling)

Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

*National Suicide Prevention Lifeline - 1 (800) 273-8255 – 24/7 on call*

[suicidepreventionlifeline.org](https://suicidepreventionlifeline.org)

Free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week.

*Relationship and Sexual Violence Prevention Services (RSVP) - (213) 740-9355(WELL), press “0” after hours – 24/7 on call*

[studenthealth.usc.edu/sexual-assault](https://studenthealth.usc.edu/sexual-assault)

Free and confidential therapy services, workshops, and training for situations related to gender-based harm.

*Office of Equity and Diversity (OED) - (213) 740-5086 | Title IX – (213) 821-8298*

[equity.usc.edu](https://equity.usc.edu), [titleix.usc.edu](https://titleix.usc.edu)

Information about how to get help or help someone affected by harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants.

*Reporting Incidents of Bias or Harassment - (213) 740-5086 or (213) 821-8298*

[usc-advocate.symplicity.com/care\\_report](https://usc-advocate.symplicity.com/care_report)

Avenue to report incidents of bias, hate crimes, and microaggressions to the Office of Equity and Diversity | Title IX for appropriate investigation, supportive measures, and response.

*The Office of Disability Services and Programs - (213) 740-0776*

[dsp.usc.edu](https://dsp.usc.edu)

Support and accommodations for students with disabilities. Services include assistance in providing readers/notetakers/interpreters, special accommodations for test taking needs, assistance with architectural barriers, assistive technology, and support for individual needs.

*USC Campus Support and Intervention - (213) 821-4710*

[campussupport.usc.edu](https://campussupport.usc.edu)

Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.

*Diversity at USC - (213) 740-2101*

[diversity.usc.edu](https://diversity.usc.edu)

Information on events, programs and training, the Provost's Diversity and Inclusion Council, Diversity Liaisons for each academic school, chronology, participation, and various resources for students.

*USC Emergency - UPC: (213) 740-4321, HSC: (323) 442-1000 – 24/7 on call*

[dps.usc.edu](https://dps.usc.edu), [emergency.usc.edu](https://emergency.usc.edu)

Emergency assistance and avenue to report a crime. Latest updates regarding safety, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible.

*USC Department of Public Safety - UPC: (213) 740-6000, HSC: (323) 442-120 – 24/7 on call*

[dps.usc.edu](https://dps.usc.edu)

Non-emergency assistance or information.

*Office of the Ombuds - (213) 821-9556 (UPC) / (323-442-0382 (HSC)*

[ombuds.usc.edu](https://ombuds.usc.edu)

A safe and confidential place to share your USC-related issues with a University Ombuds who will work with you to explore options or paths to manage your concern.